U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Castilleja christii

COMMON NAME: Christ's paintbrush

LEAD REGION: 1

INFORMATION CURRENT AS OF: September 27, 2005

STATUS/ACTION:

___ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status
___ New candidate
_X_ Continuing candidate
___ Non-petitioned
_X_ Petitioned - Date petition received: petitioned twice after the species was already a candidate (September 28, 1999; and February 19, 2002). Also petitioned to emergency list the species on February 22, 2002.
__ 90-day positive - FR date:
__ 12-month warranted but precluded - FR date:
__ Did the petition request a reclassification of a listed species?
FOR PETITIONED CANDIDATE SPECIES:
a. Is listing warranted (if yes, see summary of threats below)? _yes
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? _yes
c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded. We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations, and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).
_X_ Listing priority change
Former LP: _11_

New LP: __8_

Date when the species first became a Candidate (as currently defined): July 1, 1975,.

___ Candidate removal: Former LP: ___

___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

____U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

___ F – Range is no longer a U.S. territory.

___ I – Insufficient information exists on biological vulnerability and threats to support listing.

___ M – Taxon mistakenly included in past notice of review.

___ N – Taxon does not meet the Act's definition of "species."

___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering Plant, Scrophulariaceae (Figwort) Family

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Idaho

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Idaho

LAND OWNERSHIP: The single population of C. christii occurs on land managed by the USDA Forest Service, (Forest Service) Sawtooth National Forest (Minidoka Ranger District).

LEAD REGION CONTACT: Region 1 Regional Office, Paul Phifer, 503-872-2823, paul_phifer@fws.gov.

LEAD FIELD OFFICE CONTACT: Snake River Fish and Wildlife Office, Gina Glenne 208-685-6958, Gina_Glenne@fws.gov or Marilyn Hemker 208-378-5288 Marilyn_Hemker@fws.gov.

BIOLOGICAL INFORMATION:

Species Description: *Castilleja christii* is an herbaceous perennial, reaching 15 to 30 centimeters (6 to 12 inches) in height with a yellow to yellow-orange inflorescence.

Taxonomy: *Castilleja christii* was first collected by John Christ in 1950, although it was not recognized as a new species until 1973 (Holmgren 1973). We are not aware of any disagreement regarding the taxonomy of the species and consider it to be a valid taxon.

Habitat/Life History: *Castilleja christii* is endemic to subalpine meadow and sagebrush habitats found in the upper elevations of the Albion Mountains, Cassia County, Idaho. *C. christii* occurs primarily on gentle, northerly-facing slopes. It is found in three distinct communities: snowbed, graminoid, and sagebrush/grassland habitat. Associated species include *Artemisia tridentata* ssp.

vaseyana, *Festuca idahoensis*, *Solidago multiradiata*, *Aster foliaceus*, *Agropyron caninum*, and *Elymus trachycaulus*. The density of *C. christii* is inversely related to the density of sagebrush; it generally only occurs in openings between shrubs (Moseley and Hudak 1994, Moseley 1996).

All *Castilleja* species are considered hemiparasites, dependent on the health of their surrounding native plant community (Shenk and Holsinger 2001). Hemiparasites are able to form root associations with host pants and extract water, carbohydrates and alkaloids compounds from host plants. Specific host species have yet to be identified for *C. christii* (Motychak and Pierson 2005).

Historical Distribution and Current Distribution: The single population of this species, which covers only 85 hectares (ha) or 220 acres (ac), is restricted to the summit of Mount Harrison. Despite searches within similar adjacent habitats, no other populations have been documented for the species (Moseley 1993).

Population Estimates/Status: The population was initially thought to consist of approximately 10,000 individuals (Moseley and Hudak 1994). However, subsequent estimates by Moseley (1996) suggested a much larger population size. There is no current estimate of the total population size, although research initiated in 2005 is attempting to estimate this number using line distance sampling techniques (Marilyn Hemker, U.S. Fish and Wildlife Service, Snake River Fish and Wildlife Office (USFWS), *in litt.* 2005).

Monitoring efforts began in 1995 and have continued on a regular basis (Mancuso 2003, Pierson, 2004). In 1997, the population was reported to be stable (Moseley 1998). Large annual fluctuations in plant numbers are reported to be typical for the species (Mancuso 2003). Plant densities measured from 2000 to 2004 continued in a steady decline, however, in 2005 densities appear to have increased above 2004 levels. A recent summary of population parameters measured since 1995 indicates that plant density and reproductive output for the entire *C. christii* population have declined (Motychak and Pierson 2005). The reproductive output declined from 5.04 stems per plant in 1995 to 1.72 stems per plant in 2005. The density of plants declined to a much lesser degree, from 4.42 plants per square meter to 3.49 plants per square meter (Motychak and Pierson 2005).

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Although the Forest Service restricts vehicle traffic to established roads, frequent unauthorized off-road vehicle use has impacted the *C. christii* population. Several unimproved roads, which are used to access camping and hang-gliding launch sites, go through the *C. christii* population. One of the most severe direct threats to *C. christii* and its habitat is from vehicles that leave the existing roads, for example, to get around snowdrifts on the main road to the summit and fire lookout (Moseley and Hudak 1994, USFS and USFWS 2005). This results in erosion of the plant's habitat and mortality of individuals. In an effort to control damage from off-road vehicle use, during the course of the last six years, the Forest Service has placed large rocks along most roadways running through the *C. christii* population with an estimated 3.2 km (2 miles mi) of rock barriers already installed (Pierson 2004). The need for additional rock barriers will be assessed in the future. To further control off-road vehicle damage as well as damage from other recreational uses, an interpretive area with over 10 signs was installed in July 2004 on the top of Mount Harrison (Pierson 2004). The intent of these signs is to promote conservation of the species, remind visitors of closures to off-road and off-trail travel, and to prevent camping within the population. Outreach activities to user groups, such as hang-gliders, continue to occur periodically. Monitoring of disturbance in the population is inconclusive at this time. There is some evidence that unauthorized travel continues in occupied habitat. Impacts from recreation visiting, trampling off road vehicles is considered the second highest threat for *C. christii* (USFS and USFWS 2005). Based on current information, we believe that the actions taken by the Forest Service will reduce this threat. In future years, monitoring results from the 2005 Candidate Conservation Agreement (Agreement) on this species will give us further information on the status of this threat in the population and should indicate whether the threat has been reduced or eliminated.

Although there is no designated trailhead at the summit, hikers often spend time at or near the lookout and walk through habitat occupied by *C. christii*. Such use can impact this species through trampling of plants, which could result in direct mortality or reduced reproduction. Fencing, barriers, or signs to restrict hikers or vehicles to existing roads or trails are lacking in some areas. In the winter, snowmobilers frequent the area, which is accessible from a designated winter parking area located a few miles from the summit of Mount Harrison. Because winter use has not been monitored, it is not known if this activity is impacting habitat for this species (USFS and USFWS 2005).

The largest loss of habitat (estimated at 8 ha (20 ac)) within the *C. christii* population has been from past road developments and installation of underground powerlines (Mancuso 1996). The main road to the summit, Howell Canyon Road, was paved in 1997. Since this road bisects the *C. christii* population, some plants were directly impacted by construction or staging activities (C. Frisbee, Botanist, U.S. Forest Service, Boise/Sawtooth National Forest, pers. comm. 1998). Although the direct impacts to the habitat of the species associated with the paving were relatively minor, indirect impacts (such as nonnative plant introductions, road maintenance activities, and altered drainage patterns) have not been thoroughly quantified.

Most significantly, the nonnative, rhizomatous, grass *Bromus inermis* (smooth brome) was found in two of the 20 population monitoring transects in 1995. When the Howell Canyon Road was paved in 1997, this plant may have been seeded along the road in disturbed areas (Pierson 2004). The abundance of smooth brome increased and was found in six of the 20 transects in 2002. The species moved several hundred feet from the paved roadside into the *C. christii* population, sometimes forming dense monocultures, which are likely excluding *C. christii*. It is estimated that 12 ha (30 ac) within the 220 acre population (13.6 percent) were impacted by smooth brome in 2005 (Motychak and Pierson 2005).

In a response to the smooth brome invasion into the *C. christii* population, the U.S. Forest Service (Forest Service) and U.S. Fish and Wildlife Service (Service) initiated a long-term treatment plan to remove smooth brome from the *C. christii* population (USFS and USFWS 2005). Initial hand pulling efforts in 2003 removed an estimated 4 tons (3,627 kilograms) of smooth brome from the population. Further control efforts were conducted in 2004 by carefully hand wicking the smooth brome with herbicide (Pierson 2004). The treatments in 2003 and 2004 were not successful at eliminating smooth brome in the *C. christii* population. Smooth brome still persisted on 12 ha (30 ac), 13.6 percent of the population area of *C. christii*, in 2005. The smooth brome on these 12 ha (30 ac) was treated with herbicide when smooth brome was in the boot stage and this was followed up with removal of seed heads in 2005. The treated plants in 2005 showed signs of stress and large infestations appeared weakened, however, vegetation monitoring conducted after the treatments indicated that smooth brome still remained. Plant monitoring transects conducted after the 2005 treatments within the *C. christii* population had a mean of 0.21, 0.19 and 0.12 smooth brome stems per meter squared in the graminoid, snowbed and sagebrush communities, respectively. Invasive plants, largely consisting of smooth brome, have increased in mean density in the *C. christii* population between 2002 and 2005 (Pierson, pers. comm. 2005; Motychak and Pierson 2005). It is premature to assess the success of 2005 treatments for this highly invasive species. The threat of this species to the *C. christii* and its habitat still persists.

Other nonnative, invasive plant species are also present and increasing in the *C. christii* population since monitoring of these species began in 2002. The density of these nonnative, invasive species such as *Agropyron sp*. (wheatgrass cultivar) and *Taraxacum officinale* (dandelion), increased along with the *C. christii* plant density between 2004 and Long term persistence of *C. christii* most likely depends on associations with native host plants (Motychak and Pierson 2005). The hosts for *C. christii* are not known at this time.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Aside from minor collections for bouquets, overutilization is not known to be a factor at this time.

C. Disease or predation.

Livestock grazing can adversely affect *C. christii* by trampling and/or consuming plants and could result in reduced reproductive success and mortality (USFS and USFWS 2005). The

summit of Mount Harrison has been closed to livestock grazing for over 20 years. However, with three surrounding grazing allotments, the area has been subject to trespass livestock grazing throughout the years. In an effort to prevent trespass livestock grazing within the *C. christii* population, the Forest Service has, over the years, installed approximately 6 kilometers (km) (4 miles (mi)) of fence (Pierson 2004). In 2003, cows were observed in the westernmost portion of the population, leading to installation of an additional 1.0 km (0.6 mi) of fence to prevent trespass livestock into the *C. christii* population and the adjacent Mount Harrison Research Natural Area (RNA) (Pierson 2004). Also, the lookout person atop Mount Harrison has been instructed to report all trespass livestock within the population. Annual meetings with livestock permittees include discussions of conservation actions for the species including continued efforts to prevent trespass livestock grazing. We believe that livestock grazing will remain a minor threat to this species in the future.

D. The inadequacy of existing regulatory mechanisms.

The species was considered a sensitive species by the Forest Service's Regional Forester for Region 4 before the Sawtooth National Forest Plan (Forest Plan) was written in 2003 and it continues to hold that status with the Forest Service. The objectives of management for such species are to ensure their continued viability throughout their range on National Forest lands, and to ensure that they do not become threatened or endangered under ESA because of Forest Service actions (USFS and USFWS 2005). The Forest Plan currently contains land management standards and guidelines for candidate species including *C. christii* (USFS 2003). The Forest Plan includes forest wide direction and management area direction designed to prevent or mitigate impacts to this species and its associated habitat. An appendix of the Agreement describes the links between the forest wide management direction in the Forest Plan with potential and existing threats to *C. christii* (USFS and USFWS 2005). The Agreement specifies the completion of a management plan for the Botanical Special Interest Area (BSIA) in 2005, however, the Service has not yet received this plan., This BSIA was established in 2003 and includes 142 hectares (350 acres) (77 percent of the population) to provide protection of the *C. christii* plants that are outside the RNA. Approximately 23 percent of the population lies within the boundary of the RNA. The RNA designation allows for the exclusive management of the land within its boundaries in an undisturbed state. The SIBA is managed to conserve a botanical resource in conjunction with other land uses, which is a lesser level of protection for *C. christii* than the RNA. The SIBA and RNA established the framework to provide some degree of protection of this species while carrying out land management activities on the summit of Mount Harrison.

Past conservation agreements have not been entirely successful at controlling activities that are impacting *C. christii* habitat such as unauthorized off-road vehicle use, and hang-gliding. For example, although the Forest Service lookout at the summit of Mount Harrison is staffed by a seasonal volunteer, there have been few on-the-ground enforcement efforts to control off-road vehicle use by Forest Service staff. The Forest Service continues to implement actions to reduce off-road vehicle use by placing rock barriers along most roadways running through the *C. christii* population, and installed interpretive signs in July 2004 on the top of Mount Harrison to inform the public of closures to off-road and off-trail travel, and prevent camping within the area (Pierson 2004). The 2005 summary of disturbance monitoring is inconclusive on whether the

rock barriers are reducing the incidences of off-road-travel in the population. Educational outreach by the Forest Service to user groups such as hang-gliders occurs periodically to inform them of road and camping closures. Results of the monitoring being conducted to evaluate these threats to the population are currently inconclusive.

Other natural or manmade factors affecting its continued existence.

Hybridization of *Castilleja christii* with other species of *Castilleja* in the Albion Mountains may be occurring as an indirect effect from global warming. A general trend has been documented for plant species to extend their distribution to higher elevations as a response to increases in annual temperatures (USFS and USFWS 2005, Grabherr *et al.* 1994, Pauli *et al.* 1996, Root *et al.* 2003). This ecological shift may allow lover elevation *Castilleja* species to move into and become more common within *C. christii*'s habitat. Given the narrow distribution of *C. christii* and the documented cross-visitation by the bee, *Megachile frigida*, and the observation of potentially intermediate hybrids between *Castilleja* species in the vicinity of Mount Harrison, hybridization may be occurring.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

A Conservation Agreement (CA) between the Forest Service and the U. S. Fish and Wildlife Service (Service) was completed in 1995 and expired in September 2000. This CA focused on actions necessary to protect habitat for *C. christii* and to stabilize the species' population (USFWS 1995). The actions in the CA were not fully implemented. For example, fencing to control livestock access to the summit was not completed. However, efforts while the CA was current, and subsequent to the expiration of the CA, made progress toward many of the conservation activities. Interpretive signs were installed in the population in 2004 and off-road vehicle barriers were installed around the population. Monitoring established with this original CA has been conducted during eight growing seasons. A Conservation Assessment and Strategy for *C. christii* was prepared by the Forest Service in 2002 and this was incorporated into the Sawtooth National Forest Plan by reference in 2003 (USFS 2002, USFS 2003).

The Service and the Forest Service completed a new Candidate Conservation Agreement for *C. christii* in 2005. This Agreement tiers to the Sawtooth National Forest Plan (Forest Plan), which contains specific protections for Threatened, Endangered, Proposed, Candidate, and Sensitive species (USFS 2003). The Forest Plan includes forest wide direction and management area direction designed to prevent or mitigate impacts to *C. christii* and its associated habitat. An appendix of the Agreement describes the links between the forest wide management direction in the Forest Plan with potential and existing threats to *C. christii* (USFS and USFWS 2005). The Forest Service and Service committed to continue working together to conserve *C. christii* in this Agreement. Fifty-one agency responsibilities and conservation actions are specified in the Agreement, such as new actions to detect, control, and monitor invasive species; actions to provide outreach to public and user groups; and conduct research. Also included are tasks, performance metrics, thresholds, management response and reporting requirements for 18 of the 51 conservation actions. These tasks provide effectiveness monitoring and management involvement during the 10-year Agreement. The anticipated timing, funding estimates, and the responsible parties for implementing conservation actions and tasks are also provided (USFS and USFWS 2005). An analysis of the actions in this Agreement under the Service's Policy for

Evaluating Conservation efforts (PECE) has not yet been conducted. We anticipate conducting PECE in 2007 or 2008 after some tasks described in the Agreement are initiated and maintained.

Approximately 23 percent of the *C. christii* population occurs in the RNA (Moseley and Hudak 1994). The RNA is located to the east of, and directly adjacent to, the existing access road that leads to the summit of Mount Harrison. The majority of the *C. christii* population occurs immediately west of the road. This area was not included in the RNA because the presence of roads and structures was not considered to be compatible with the goals or management of an RNA. The Forest Service has decided not to expand the RNA to include more of the *C. christii* population, but they instead designated a Special Botanical Interest Area (SBIA) of approximately 130 ha (325 ac) that includes the remaining 72 percent of the *C. christii* population not contained within the RNA (Pierson 2004, USFS 2003, USFS and USFWS 2005). A SBIA is managed differently than an RNA. An SBIA is managed to conserve a botanical resource in conjunction with other land uses, while an RNA is managed exclusively for the conservation of the land in an undisturbed state. While this SBIA designation provided a lesser level of protection for the *C. christii* population than RNA designation, it resulted in an increased level of protection from its previous status of no special protection. The completion of the management plan for the SBIA is a conservation action in the new Agreement (USFS and USFWS 2005).

In an effort to control damage from off-road vehicle use, during the course of the last six years, the Forest Service has placed large rocks along most roadways running through the *C. christii* population with an estimated 3.2 km (2 miles mi) of rock barriers already installed (Pierson 2004). The need for additional rock barriers will be assessed in the future. To further control off-road vehicle damage as well as damage from other recreational uses, an interpretive area with over 10 signs was installed in July 2004 on the top of Mount Harrison (Pierson 2004). The intent of these signs is to promote conservation of the species, remind visitors of closures to off-road and off-trail travel, and to prevent camping within the population. Outreach activities to user groups, such as hang-gliders, continue to occur periodically.

In a response to the smooth brome invasion into the *C. christii* population, the Forest Service and the Service have initiated a long-term treatment plan to remove the smooth brome (USFS and USFWS 2005). Initial hand pulling efforts in 2003 removed an estimated 3,627 kilograms (kg) (4 t (tons)) of smooth brome from the population. Further control efforts were conducted in 2003 and 2004 by carefully hand wicking the smooth brome with herbicide (Pierson 2004). The smooth brome infestation was treated in 2005 with herbicide when smooth brome was in the boot stage; this treatment was followed by removal of seed heads. The effectiveness of these treatments on 12 ha (30 acres) within the population are not yet known, however assessing the effectiveness of this treatment is prescribed in the Agreement.

In 1998, the *C. christii* population, as well as the adjacent RNA, were included in a mineral withdrawal of National Forest System lands until 2018 to prevent mining claims in the area. This withdrawal will need to be renewed in 2018. (Pierson 2004, USFS and USFWS 2005).

In an effort to prevent trespass livestock grazing within the *C. christii* population, the Forest Service has, over the years, installed approximately 6 km (4 mi) of fence (Pierson 2004). In

2003, an additional 1.0 km (0.6 mi) of fence was installed to prevent trespass livestock into the *C. christii* population and the adjacent RNA (Pierson 2004). Furthermore, the lookout person atop Mount Harrison has been instructed to report all trespass livestock within the population. Annual meetings with livestock permittees include discussions of conservation actions for the species including continued efforts to prevent trespass livestock grazing. Upkeep of fences and an assessment of fence effectiveness are needed into the future. No unauthorized livestock use within the *C. christii* population was reported by the Forest Botanist in 2005 (Pierson, pers. comm. 2005).

SUMMARY OF THREATS

Present and potential losses to *Castilleja christii* habitat, as described under factor A, above, include impacts from wheeled vehicles that leave the existing roads (*e.g.*, to get around snowdrifts on the main road to the summit and fire lookout). In addition, hikers may venture into the population around the summit. Both vehicle use and trampling by hikers result in the erosion of the plant's habitat or mortality of plants. Although the Forest Service recently placed large rocks along most roadways running through the *C. christii* population with an estimated 3.2 km (2 miles mi) of rock barriers, it is not yet clear that this is effectively removing the threat posed by ORV activity. Present and potential losses of habitat also are related to invasive plant species. The main road to the summit, Howell Canyon Road, bisects the population and was paved in 1997. Past road development and installation of underground powerlines also eliminated habitat in the short term and opened up the area for invasive, nonnative plants. These invasive plant species have been documented as increasing in the *C. christii* population since monitoring of these species began in 2002. Smooth brome was documented on approximately 12 ha (30 ac) within the 89 ha (220 acre) population (13.6 percent) during the third year of eradication efforts for this species in 2005. Although eradication efforts are continuing, the non-native invasive species continue to pose a threat to the habitat of *C. christii*, due to the highly restricted distribution of the species.

In prior assessments of this species, mortality due to livestock grazing (i.e., predator as considered under factor C), was identified as part of the basis for our determination that *Castilleja christii* meets our definition of a candidate species. Mount Harrison is surrounded by three grazing allotments and the area has been subject to trespass livestock grazing in the past, although not during the last two years. The recent placement of fences around the population may have reduced trespass livestock to the point that such grazing only poses a minor threat to *C. christii*, but monitoring data is needed to determine this.

To date, past conservation agreements and other regulatory mechanisms (as described in factor D, above) have not been entirely successful at controlling activities that are impacting *C. christii* habitat such as unauthorized off-road vehicle use, hiking, hang-gliding, and livestock grazing. A new Agreement has been adopted recently that includes numerous conservation efforts to be implemented in the future. Also, the SBIA has recently been adopted by the Forest Service, and preparing a management plan for it is one of the conservation actions called for in the new Agreement. At this time, however, based on the best available information, we continue to find that the species meets our definition of a candidate due to factors A, C, and D.

For species that are being removed from candidate status:

__Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

RECOMMENDED CONSERVATION MEASURES

LISTING PRIORITY:

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	**Imminent**	Monotypic genus	7
		Species	**8***
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude:

We continue to consider the magnitude of threat to be moderate to low for this single population of *C. christii* on 85 ha (220 ac). Although this single population may be large (greater than 10,000 individual plants), a current population estimate is not yet available. Reproductive stems per plant and plant density have decreased between 1995 and 2005. Although these trends were upward between 2004 and 2005, it is not known if the trend will continue. The success of treating smooth brome, an invasive species that was present on 13.6 percent of the population area in 2005, is currently unknown, although there is a commitment by the Forest Service and Service to continue these efforts until they are successful or for the next 10 years. The currently controllable threats are seasonal and affect only a small portion of the population (off-road travel and occasional livestock trespass). The fencing appears to be reducing the threat of seasonal livestock trespass impacts for most of the Mount Harrison summit area. Additionally, the Forest Service has, and is continuing to add, more rock barriers along the unpaved road through *C. christii* habitat to decrease the amount of off-road vehicle impacts.

Imminence:

As stated above, most human-caused threats (*i.e.*, trespass livestock and ORV use) occur seasonally, during the late-spring and summer periods when the plant is flowering. We consider these threats imminent because the evidence that they have been eliminated is inconclusive. In addition, the Forest Service has recently implemented and has committed to additional conservation measures to control nonnative plant invasions in *C. christii* habitat on the Mt. Harrison summit area. However, in the *C. christii* population the density of smooth brome, the invasive plant with the largest density in the population has increased between 2002 and 2005 despite control efforts. Smooth brome was treated in 2003, 2004, and 2005 by the Forest Service. Plant monitoring conducted following the 2005 treatments indicates smooth brome still remains in the population, therefore this threat from smooth brome to *C. christii* habitat still persists within the population. For these reasons, the threat from non-native plant invasions is considered imminent. Consequently, we are changing our ranking from non-imminent to imminent. This change also is more consistent with the interpretation of imminent threats as being those which are on-going.

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No, the moderate to low magnitude of threats precludes the need for emergency listing at this time. The threats to the species (livestock grazing, off-highway vehicle impacts, and other recreational impacts), while still present, are being addressed through conservation measures in the 2005 Candidate Conservation Agreement by actions such as grazing closures and enclosures, rock barriers, and educational signage. Many of these measures were initiated before the 2005 agreement. However monitoring is inconclusive as to whether these human caused threats have been eliminated. Until we can confirm that the existing actions are sufficient to minimize or reduce the known threats, we will continue to consider these threats as a potential basis for listing the species. Our ranking of moderate to low magnitude reflects the aggressive actions undertaken by the Forest Service to address and minimize or eliminate threats to this species. The threat from smooth brome, although still imminent, is being dealt with aggressively by the Forest Service and Service. The population appears to contain large numbers of plants although the reproductive stems per plant, an indicator of reproductive capacity has significantly decreased since 1995. Plant density and reproductive capacity increased between 2004 and 2005, however future trends are unknown. The Agreement provides for continued conservation actions and creates new tasks to assess the effectiveness of efforts to reduce the threats to the species for the next 10 years.

DESCRIPTION OF MONITORING:
Population monitoring of *C. christii* has occurred in 1995, 1996, 1997, 2000, 2002, 2003, 2004, and 2005 (Mancuso 2003, Pierson 2004). Twenty permanent, randomly located monitoring transects, each 20 x 1 m (60 x 3 ft), were originally established within the population, and two transects were added in 2002. Transects are distributed in each of the three habitat types (snowbed, graminoid, and sagebrush/grassland) and the number of plants and reproductive stems is measured across the entire 20 m (60 ft) transect in joining one square meter (10.8 square ft) frames (Mancuso 2003). Habitat monitoring occurred in 1995, 2000, and 2002 utilizing 10 x 10 m (30 x 30 ft) plots that include 10 m (30 ft) of the population. Within these 10 m (30 ft) square plots, all plants are identified and cover classes estimated for each (Mancuso 2003). Photopoints

have been established at each of the 22 transects. In 2002, the information recorded in the transects established for the population monitoring was expanded to include measurement of disturbance including off-road vehicle use, livestock disturbance, weed disturbance, pocket gopher disturbance, and other unknown disturbances. The analysis of this monitoring has not been completed for the human caused disturbance recorded in these transects. Finally, the monitoring includes a 325 m (1,066 ft) permanent transect, established in 1995, to monitor vegetation recovery from installation of an underground cable line. The Forest Service has submitted monitoring reports to the Service every year that monitoring has occurred except 2003 and 2004, and they completed a synthesis of monitoring results of invasive plant species between 1995 and 2005. (See the Population Estimates/Status section, above, for a summary of the monitoring results.)

The small, single population of *C. christii* with only one land manager, the Forest Service, facilitates the coordination and assessment of the species. The Service has generally made at least one visit per year to the site to discuss threats and conservation activities with the Forest Service. Ongoing cooperative projects including the interpretive signs, nonnative plant control, and updating the Agreement require constant informational exchange. Because of the threats single populations face, continued regular monitoring and Service involvement is needed and is part of the new Agreement.

COORDINATION WITH STATES

The Idaho Department of Fish and Game, Conservation Data Center, has been involved in an ongoing dialogue with the Service on monitoring and assessment of this species. They conducted a status review; designed the population, habitat, and threat monitoring; and they have conducted the monitoring with the Forest Service and Service since 1995. They received funding through Section 6 for research underway for the one-time population estimate of *C. christii* (see Population Estimates/Status section, above).

LITERATURE CITED

Frisbee, C. 1998. Monitoring report: *Castilleja christii* (Christ's Indian paintbrush) on the Sawtooth National Forest. Prepared by the Boise and Sawtooth National Forests. December 10, 1998, Boise, Idaho. 2 pp.

Holmgren, N.H. 1973. Five new species of *Castilleja* (Scrophulariaceae) from the Intermountain Region. Bulletin of the Torrey Botanical Club. 100: 83-93.

Mancuso, M. 1996. Species account: *Castilleja christii*. Prepared by the Idaho Department of Fish and Game's Conservation Data Center, Boise, Idaho. April 25, 1996. 6 pp.

Mancuso, M. 2003. A fifth year of monitoring Christ's Indian paintbrush (*Castilleja christii*) on the Sawtooth National Forest: 2002 results. Prepared by the Idaho Department of Fish and Game's Conservation Data Center, Boise, Idaho. April 2003. 17 pp.

Moseley, R.K. 1993. The status and distribution of Christ's Indian paintbrush (*Castilleja christii*) and Davis' wavewing (*Cymopterus davisii*) in the Albioun Mountains, Sawtooth

National Forest and City of Rocks National Reserve. Prepared by the Idaho Department of Fish and Game's Conservation Data Center, Boise, Idaho. 18 pp.

Moseley, R.K 1996. Christ's Indian paintbrush (*Castilleja christii*) monitoring on the Sawtooth National Forest: transect establishment and baseline data. Prepared by the Idaho Department of Fish and Game's Conservation Data Center, Boise, Idaho. 16 pp.

Moseley, R.K. 1998. Christ's paintbrush monitoring on the Sawtooth National Forest: third-year results. Prepared by the Idaho Department of Fish and Game's Conservation Data Center, Boise, Idaho. 10 pp.

Moseley, R. and H. Hudak. 1994. Conservation strategy for *Castilleja christii* (Christ's Indian paintbrush). Prepared by the Idaho Department of Fish and Game and the Sawtooth National Forest for the Idaho Department of Parks and Recreation, Boise, Idaho.

Motychak, J. and K. Pierson. 2005. A ten year summary of monitoring Christ's Indian Paintbrush (*Castilleja christii*) on Mount Harrison, Sawtooth National Forest (1995-2005). Unpublished report, prepared for the USDA Forest Service, Sawtooth National Forest, Twin Falls, Idaho. 18 pp.

Pierson, Kim. 2004. Christ's Indian paintbrush (*Castilleja christii*) – Candidate Notice of Review (CNOR) 2004 update. USDA Sawtooth National Forest. Received May 31, 2004. 2 pp.

Shenk G., and K. Holsinger. 2001. *Castilleja coccinea* (L.) Sprengel (Indian Paintbrush conservation and research plan). New England Wildflower Society, Framingham, Massachusetts. 18 pp.

USDA Forest Service (USFS). 2002. Conservation assessment and strategy for *Castilleja christii*, Christ's Indian paintbrush. Prepared by the USDA Forest Service, Sawtooth National Forest, Twin Falls, Idaho. April 2002. 55 pp.

USDA Forest Service. 2003. Sawtooth National Forest land and resource management plan. Intermountain Region, Twin Falls, Idaho. Pages III-1 – III-93, III-270, III-280, and III – 288.

USDA Forest Service and U.S. Fish and Wildlife Service (USFWS). 2005. Candidate Conservation Agreement for *Castilleja christii*, Christ's Indian paintbrush. USDA Forest Service, Minidoka Ranger District, Sawtooth National Forest, Twin Falls and Burley, Idaho. 60pp.

U.S. Fish and Wildlife Service. 1995. Conservation agreement for *Castilleja christii*. Prepared by the Snake River Basin Office, Boise, Idaho and signed by the Service and the USDA Sawtooth National Forest, Twin Falls, Idaho (dated 9/25/95).

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: Acting _____ 11/16/05
Regional Director, Fish and Wildlife Service Date

_____

Concur: _____ August 23, 2006
Director, Fish and Wildlife Service Date

Do not concur: _____
Director, Fish and Wildlife Service Date

Date of annual review:
Conducted by: